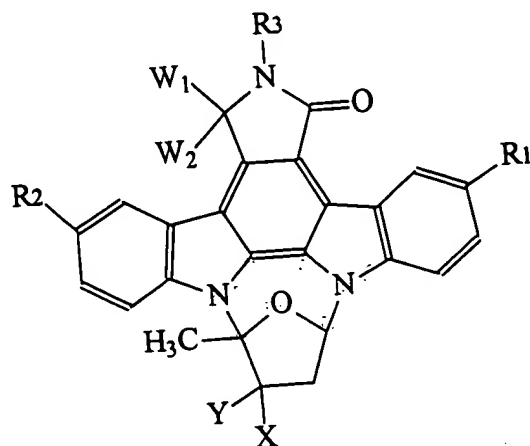


WHAT IS CLAIMED IS:

1. A compound defined by the general formula (I):



wherein:

one of R^1 and R^2 is selected from the group consisting of:

a) $-\text{CO}(\text{CH}_2)_j\text{R}^4$, wherein j is 1 to 6, and R^4 is selected from the group consisting of:

1) hydrogen and a halogen;

2) $-\text{NR}^5\text{R}^6$, wherein R^5 and R^6 independently are hydrogen, substituted lower alkyl, unsubstituted lower alkyl, substituted aryl, unsubstituted aryl, substituted heteroaryl, unsubstituted heteroaryl, substituted aralkyl, unsubstituted aralkyl, lower alkylaminocarbonyl, or lower alkoxy carbonyl; or R^5 and R^6 are combined with a nitrogen atom to form a heterocyclic group;

3) N_3 ;

4) $-\text{SR}^{27}$, wherein R^{27} is selected from the group consisting of:

i) hydrogen;

ii) substituted lower alkyl;

iii) unsubstituted lower alkyl;

iv) substituted aryl;

v) unsubstituted aryl;

vi) substituted heteroaryl;

vii) unsubstituted heteroaryl;

Sub
A2

0 1 2 3 4 5 6 7 8 9
 10 11 12 13 14 15 16 17 18 19
 20 21 22 23 24 25 26 27 28 29
 30 31 32 33 34 35 36 37 38 39
 40 41 42 43 44 45 46 47 48 49
 50 51 52 53 54 55 56 57 58 59
 60 61 62 63 64 65 66 67 68 69
 70 71 72 73 74 75 76 77 78 79
 80 81 82 83 84 85 86 87 88 89
 90 91 92 93 94 95 96 97 98 99

- 5) OR^{29} (wherein R^{29} is hydrogen, substituted lower alkyl, unsubstituted lower alkyl, or COR^{30} (wherein R^{30} is hydrogen, lower alkyl, substituted aryl, unsubstituted aryl, substituted heteroaryl, or unsubstituted heteroaryl));
- b) $-\text{CH}(\text{OH})(\text{CH}_2)_b\text{R}^{4A}$, wherein b is 1 to 6 and R^{4A} is hydrogen or the same as R^4 ;
- c) $-(\text{CH}_2)_d\text{CHR}^{31}\text{CO}_2\text{R}^{32}$ wherein d is 0 to 5, R^{31} is hydrogen, $-\text{CONR}^5\text{R}^6$, or CO_2R^{33} (wherein R^{33} is hydrogen or lower alkyl), and R^{32} is hydrogen or lower alkyl;
- d) $-(\text{CH}_2)_d\text{CHR}^{31}\text{CONR}^5\text{R}^6$;
- e) $-(\text{CH}_2)_k\text{R}^7$ wherein k is 2 to 6, and R^7 is halogen, CO_2R^8 (wherein R^8 is hydrogen, lower alkyl, substituted aryl, unsubstituted aryl, substituted heteroaryl, or unsubstituted heteroaryl), CONR^5R^6 , substituted aryl, unsubstituted aryl, substituted heteroaryl, unsubstituted heteroaryl, OR^9 (wherein R^9 is hydrogen, substituted lower alkyl, unsubstituted lower alkyl, acyl, substituted aryl, or unsubstituted aryl), SR^{27B} (wherein R^{27B} is the same as R^{27}), $\text{NR}^{10}\text{R}^{11}$ (wherein R^{10} and R^{11} are the same as R^5 and R^6) or N_3 ;
- f) $-\text{CH}=\text{CH}(\text{CH}_2)_m\text{R}^{12}$ wherein m is 0 to 4, and R^{12} is hydrogen, lower alkyl, CO_2R^{8A} (wherein R^{8A} is the same as R^8), $-\text{CONR}^5\text{R}^6$, substituted aryl, unsubstituted aryl, substituted heteroaryl, unsubstituted heteroaryl, OR^{9A} (wherein R^{9A} is the same as R^9), or $\text{NR}^{10A}\text{R}^{11A}$ (wherein R^{10A} and R^{11A} are the same as R^5 and R^6);
- g) $-\text{CH}=\text{C}(\text{CO}_2\text{R}^{33A})_2$, wherein R^{33A} is the same as R^{33} ;
- h) $-\text{C}\equiv\text{C}(\text{CH}_2)_n\text{R}^{13}$, wherein n is 0 to 4, and R^{13} is the same as R^{12} ;
- i) $-\text{CH}_2\text{OR}^{44}$, wherein R^{44} is substituted lower alkyl;

j) hydrogen, lower alkyl, halogen, acyl, nitro, $\text{NR}^{14}\text{R}^{15}$ (wherein R^{14} or R^{15} is hydrogen or lower alkyl, and the other is hydrogen, lower alkyl, acyl, carbamoyl, lower alkylaminocarbonyl, substituted arylaminocarbonyl or unsubstituted arylaminocarbonyl);

- k) $-\text{CH}(\text{SR}^{34})_2$, wherein R^{34} is lower alkyl or alkylene;
 l) $-\text{CH}_2\text{R}^{35}$, wherein R^{35} is OR^{36} (wherein R^{36} is tri-lower alkyl silyl in which the three lower alkyl groups are the same or different, or is the same as R^{29}), or SR^{37} (wherein R^{37} is the same as R^{27});
 m) $-\text{CO}(\text{CH}_2)_q\text{R}^{16}$, wherein q is 1 to 6, and R^{16} is the same as R^4 ;
 n) $-\text{CH}(\text{OH})(\text{CH}_2)_e\text{R}^{38}$, wherein e is 1 to 6, and R^{38} is the same as R^{4A} ;
 o) $-(\text{CH}_2)_f\text{CHR}^{39}\text{CO}_2\text{R}^{40}$, wherein f is 0 to 5, R^{39} is the same as R^{31} and R^{40} is the same as R^{32} ;
 p) $-(\text{CH}_2)_r\text{R}^{17}$, wherein r is 2 to 6, and R^{17} is the same as R^7 ;
 q) $-\text{CH}=\text{CH}(\text{CH}_2)_t\text{R}^{18}$, wherein t is 0 to 4, and R^{18} is the same as R^{12} ;
 r) $-\text{CH}=\text{C}(\text{CO}_2\text{R}^{33B})_2$, wherein R^{33B} is the same as R^{33} ;
 s) $-\text{C}\equiv\text{C}(\text{CH}_2)_u\text{R}^{19}$, wherein u is 0 to 4, and R^{19} is the same as R^{13} ;

R^3 is hydrogen, acyl, or lower alkyl;

X is selected from the group consisting of:

- a) hydrogen;
 b) formyl;
 c) lower alkoxy carbonyl;
 d) $-\text{CONR}^{20}\text{R}^{21}$, wherein:

R^{20} and R^{21} independently are:

hydrogen;

lower alkyl;

$-\text{CH}_2\text{R}^{22}$, wherein R^{22} is hydroxy, or

$-\text{NR}^{23}\text{R}^{24}$ (wherein R^{23} or R^{24} is hydrogen or lower alkyl, and the other is hydrogen, lower alkyl, or the residue of an α -amino acid in which the hydroxy group of the carboxyl group is excluded, or R^{23} and R^{24} are combined with a nitrogen atom to form a heterocyclic group); and

- e) $-\text{CH}=\text{N}-\text{R}^{25}$, wherein R^{25} is hydroxy, lower alkoxy, amino, guanidino, or imidazolylamino;

Y is hydroxy, lower alkoxy, aralkyloxy, or acyloxy; or

X and Y combined represent, $-\text{X}-\text{Y}-$, $=\text{O}$, $-\text{CH}_2\text{O}(\text{C}=\text{O})\text{O}-$, $-\text{CH}_2\text{OC}(=\text{S})\text{O}-$, $-\text{CH}_2\text{NR}^{26}\text{C}(=\text{O})-$ (wherein R^{26} is hydrogen or lower alkyl), $-\text{CH}_2\text{NHC}(=\text{S})\text{O}-$, $-\text{CH}_2\text{OS}(=\text{O})\text{O}-$, or $-\text{CH}_2\text{OC}(\text{CH}_3)_2\text{O}-$; and

150

W¹ and W² are hydrogen, or W¹ and W² together represent oxygen;
a pharmaceutically acceptable salt thereof.

2. The compound of claim 1 wherein:

a) one of R¹ and R² is selected from the group consisting of -(CH₂)_k,
-CH=CH(CH₂)_mR¹², -C≡C(CH₂)_nR¹³, -CO(CH₂)_jSR²⁷ and -CH₂SR³⁷,
wherein R⁴⁴ is methoxymethyl, ethoxymethyl, or methoxyethyl,
and the other of R¹ and R² is selected from the group consisting of
-(CH₂)_rR¹⁷, -CH=CH(CH₂)_iR¹⁸, -C≡C(CH₂)_uR¹⁹, NR¹⁴R¹⁵, hydrogen,
halogen, nitro, -CH₂O-, substituted lower alkyl, unsubstituted lower alkyl,
-CO(CH₂)_qSR²⁷, -CH₂R³⁵, wherein R³⁵ is OR³⁶, and -CH₂SR³⁷,
wherein R³⁷ is selected from the group consisting of lower alkyl, lower alkenyl,
and benzimidazole;

b) k and r are each 2, 3, or 4;

c) j and q are each 1 or 2;

d) R⁷ and R¹⁷ are:

1) selected independently from the group consisting of : phenyl, imidazolyl, thiazolyl, or tetrazolyl; or

2) selected pairwise, from the group consisting of:

i) -CO₂R⁸ and CO₂R^{8A}, where R⁸ and R^{8A}, independently, are hydrogen, methyl, ethyl, or phenyl;

ii) -OR⁹ and -OR^{9A}, where R⁹ and R^{9A}, independently, are hydrogen, methyl, ethyl, phenyl, or acyl;

iii) -SR^{27B}, where R^{27B} is selected from the group consisting of hydrogen, unsubstituted lower alkyl, 2-thiazoline, and 2-thiazolidine;

iv) -NR¹⁰R¹¹ and -NR¹⁴R¹⁵, where R¹⁰, R¹¹, R¹⁴, and R¹⁵, independently, are selected from the group consisting of hydrogen, methyl, ethyl, phenyl, carbamoyl, and lower alkylaminocarbonyl;

e) R²⁷ is selected from the group consisting of substituted lower alkyl, unsubstituted lower alkyl, substituted phenyl, unsubstituted phenyl, pyridyl, pyrimidinyl, thiazole, and tetrazole;

- a) one of R^1 and R^2 is selected from the group consisting of $-(CH_2)_kR^7$, $-CH=CH(CH_2)_mR^{12}$, $-C\equiv C(CH_2)_nR^{13}$, $-CO(CH_2)_jSR^{27}$ and $-CH_2OR^{44}$, wherein R^{44} is methoxymethyl, ethoxymethyl, or methoxyethyl; and the other of R^1 and R^2 is selected from the group consisting of $-(CH_2)_rR^{17}$, $-CH=CH(CH_2)_tR^{18}$, $-C\equiv C(CH_2)_uR^{19}$, $NR^{14}R^{15}$, hydrogen, halogen, nitro, $-CH_2O-$, substituted lower alkyl, unsubstituted lower alkyl, $-CO(CH_2)_qSR^{27}$, $-CH_2R^{35}$, wherein R^{35} is OR^{36} , and $-CH_2SR^{37}$, wherein R^{37} is selected from the group consisting of lower alkyl, pyridyl, and benzimidazole;
- b) k and r are each 2, 3, or 4;
- c) j and q are each 1 or 2;
- d) R^7 and R^{17} are:
- 1) selected independently from the group consisting of : phenyl, pyridyl, imidazolyl, thiazolyl, or tetrazolyl; or
 - 2) selected pairwise, from the group consisting of:
 - i) $-CO_2R^8$ and CO_2R^{8A} , where R^8 and R^{8A} , independently, are hydrogen, methyl, ethyl, or phenyl;
 - ii) $-OR^9$ and $-OR^{9A}$, where R^9 and R^{9A} , independently, are hydrogen, methyl, ethyl, phenyl, or acyl;
 - iii) $-SR^{27B}$, where R^{27B} is selected from the group consisting of unsubstituted lower alkyl, 2-thiazoline, and pyridyl; and
 - iv) $-NR^{10}R^{11}$ and $-NR^{14}R^{15}$, where R^{10} , R^{11} , R^{14} , and R^{15} , independently, are selected from the group consisting of hydrogen, methyl, ethyl, phenyl, carbamoyl, and lower alkylaminocarbonyl;
- e) R^{27} is selected from the group consisting of substituted lower alkyl, unsubstituted lower alkyl, substituted phenyl, unsubstituted phenyl, pyridyl, pyrimidinyl, thiazole, and tetrazole;

[illegible]

3. The compound of claim 2, wherein R³ is hydrogen or acetyl, X is hydroxymethyl or lower alkoxy carbonyl, Y is hydroxy or acetyloxy, and W¹ and W² are hydrogen.

4. The compound of claim 3, wherein X is methoxycarbonyl, Y is hydroxy, and R³ is hydrogen.

5. The compound of claim 3 wherein:

one of R¹ and R² is selected from the group consisting of methoxycarbonylvinyl, ethoxycarbonylvinyl, styryl, 2-pyridylvinyl, 4-pyridylvinyl, 2-pyridylethyl, 4-pyridylethyl, phenylethyl, methoxypropynyl, hydroxypropynyl, -COCH₂SEt, -C≡CCH₂NMeBn, -CH=CH₂Et, -(CH₂)₂SMe, -(CH₂)₂S-2-thiazoline, -(CH₂)₃SMe, -CH=CH₂Et, -CH=CH-2-imidazole, (CH₂)₂OC(=O)H, methoxymethoxymethyl, ethoxymethoxymethyl, methoxyethoxymethyl, and 2-hydroxyethyl;

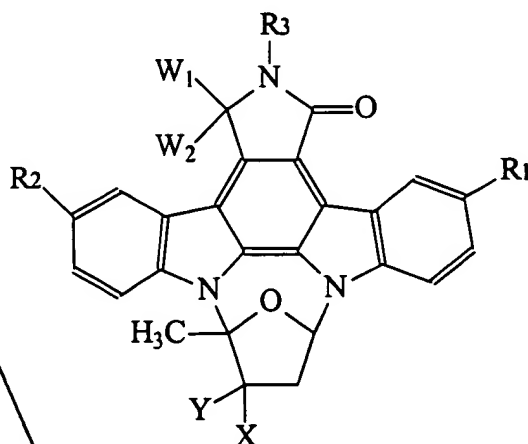
and the other of R¹ and R² is selected from the group consisting of hydrogen, halogen, methoxycarbonylvinyl, ethoxycarbonylvinyl, styryl, 2-pyridylvinyl, 4-pyridylvinyl, 2-pyridylethyl, 4-pyridylethyl, phenylethyl, nitro, amino, N-ethylurea, methoxypropynyl, hydroxypropynyl, -COCH₂SEt, -C≡CCH₂NMeBn, -CH=CHEt, -(CH₂)₂SMe, -(CH₂)₂S-2-thiazoline, -(CH₂)₃SMe, -CH₂OMe, -CH₂OEt, -CH₂SEt, pyridylthiomethyl, -CH₂S-2-benzimidazole,

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132

-CH=CH₂, -CH=CH-2-imidazole, -(CH₂)₂OC(=O)H,
methoxymethoxymethyl, ethoxymethoxymethyl, methoxyethoxymethyl,
and 2-hydroxyethyl.

6. A method for enhancing the function of a trophic factor responsive cell, comprising the step
of contacting said cell with a compound defined by the general formula (I):



wherein:

one of R¹ and R² is selected from the group consisting of:

- a) -CO(CH₂)_jR⁴, wherein j is 1 to 6, and R⁴ is selected from the group consisting of:
 - 1) hydrogen and a halogen;
 - 2) -NR⁵R⁶, wherein R⁵ and R⁶ independently are hydrogen, substituted lower alkyl, unsubstituted lower alkyl, substituted aryl, unsubstituted aryl, substituted heteroaryl, unsubstituted heteroaryl, substituted aralkyl, unsubstituted aralkyl, lower alkylaminocarbonyl, or lower alkoxy carbonyl; or R⁵ and R⁶ are combined with a nitrogen atom to form a heterocyclic group;
 - 3) N₃;
 - 4) -SR²⁷, wherein R²⁷ is selected from the group consisting of:
 - i) hydrogen;
 - ii) substituted lower alkyl;
 - iii) unsubstituted lower alkyl;
 - iv) substituted aryl;

- 5) OR^{29} (wherein R^{29} is hydrogen, substituted lower alkyl, unsubstituted lower alkyl, or COR^{30} (wherein R^{30} is hydrogen, lower alkyl, substituted aryl, unsubstituted aryl, substituted heteroaryl, or unsubstituted heteroaryl));

c) $-(CH_2)_dCHR^{31}CO_2R^{32}$ wherein d is 0 to 5, R^{31} is hydrogen, $-CONR^5R^6$, or CO_2R^{33} (wherein R^{33} is hydrogen or lower alkyl), and R^{32} is hydrogen or lower alkyl;

e) $-(CH_2)_kR^7$ wherein k is 2 to 6, and R^7 is halogen, CO_2R^8 (wherein R^8 is hydrogen, lower alkyl, substituted aryl, unsubstituted aryl, substituted heteroaryl, or unsubstituted heteroaryl), $CONR^5R^6$, substituted aryl, unsubstituted aryl, substituted heteroaryl, unsubstituted heteroaryl, OR^9 (wherein R^9 is hydrogen, substituted lower alkyl, unsubstituted lower alkyl, acyl, substituted aryl, or unsubstituted aryl), SR^{27B} (wherein R^{27B} is the same as R^{27}), $NR^{10}R^{11}$ (wherein R^{10} and R^{11} are the same as R^5 and R^6) or N_3 ;

f) $-\text{CH}=\text{CH}(\text{CH}_2)_m\text{R}^{12}$ wherein m is 0 to 4, and R^{12} is hydrogen, lower alkyl, CO_2R^{8A} (wherein R^{8A} is the same as R^8), $-\text{CONR}^5\text{R}^6$, substituted aryl, unsubstituted aryl, substituted heteroaryl, unsubstituted heteroaryl, OR^{9A} (wherein R^{9A} is the same as R^9), or $\text{NR}^{10A}\text{R}^{11A}$ (wherein R^{10A} and R^{11A} are the same as R^5 and R^6);

h) $-C\equiv C(CH_2)_nR^{13}$, wherein n is 0 to 4, and R^{13} is the same as R^{12} ;

i) $-\text{CH}_2\text{OR}^{44}$, wherein R^{44} is substituted lower alkyl;

and the other of R^1 or R^2 is selected from the group consisting of

- R^3 is hydrogen, acyl, or lower alkyl;

a) hydrogen;
b) formyl;
c) lower alkoxy carbonyl;
d) $-\text{CONR}^{20}\text{R}^{21}$, wherein:

hydrogen;

$-\text{CH}_2\text{R}^{22}$, wherein R^{22} is hydroxy, or

e) $-\text{CH}=\text{N}-\text{R}^{25}$, wherein R^{25} is hydroxy, lower alkoxy, amino, guanidino, or imidazolylamino;

Y is hydroxy, lower alkoxy, aralkyloxy, or acyloxy; or

X and Y combined represent, -X-Y-, =O, -CH₂O(C=O)O-, -CH₂OC(=S)O-, -CH₂NR²⁶C(=O)- (wherein R²⁶ is hydrogen or lower alkyl), -CH₂NHC(=S)O-, -CH₂OS(=O)O-, or -CH₂OC(CH₃)₂O-; and

W¹ and W² are hydrogen, or W¹ and W² together represent oxygen; or a pharmaceutically acceptable salt thereof.

7. A method for enhancing the function of a trophic factor responsive cell, comprising the step of contacting said cell with at least one compound of claim 2.

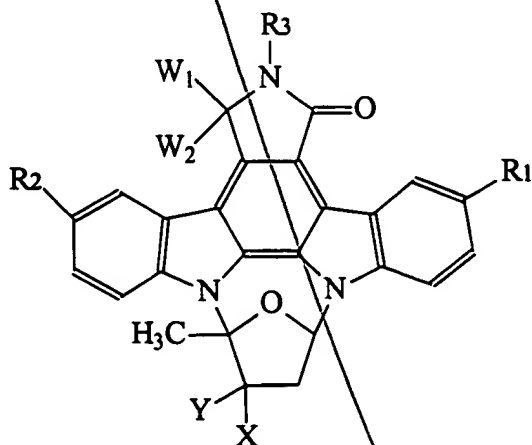
8. A method for enhancing the function of a trophic factor responsive cell, comprising the step of contacting said cell with at least one compound of claim 5.

9. The method of claim 6, wherein said trophic factor responsive cell is in a mammal.

10. The method of claim 6, wherein said trophic factor responsive cell is a neuron.

11. The method of claim 10, wherein said neuron is selected from the group consisting of cholinergic neurons and sensory neurons.

12. A method for enhancing the survival of a trophic factor responsive cell, comprising the step of contacting said cell with a compound defined by the general formula (I):



wherein:

one of R^1 and R^2 is selected from the group consisting of:

- a) $-\text{CO}(\text{CH}_2)_j\text{R}^4$, wherein j is 1 to 6, and R^4 is selected from the group consisting of:
- 1) hydrogen and a halogen;
 - 2) $-\text{NR}^5\text{R}^6$, wherein R^5 and R^6 independently are hydrogen, substituted lower alkyl, unsubstituted lower alkyl, substituted aryl, unsubstituted aryl, substituted heteroaryl, unsubstituted heteroaryl, substituted aralkyl, unsubstituted aralkyl, lower alkylaminocarbonyl, or lower alkoxy carbonyl; or R^5 and R^6 are combined with a nitrogen atom to form a heterocyclic group;
 - 3) N_3 ;
 - 4) $-\text{SR}^{27}$, wherein R^{27} is selected from the group consisting of:
 - i) hydrogen;
 - ii) substituted lower alkyl;
 - iii) unsubstituted lower alkyl;
 - iv) substituted aryl;
 - v) unsubstituted aryl;
 - vi) substituted heteroaryl;
 - vii) unsubstituted heteroaryl;
 - viii) substituted aralkyl;
 - ix) unsubstituted aralkyl;
 - x) thiazolynyl;
 - xi) $-(\text{CH}_2)_a\text{CO}_2\text{R}^{28}$, wherein a is 1 or 2, and R^{28} is selected from the group consisting of: hydrogen and lower alkyl; and
 - xii) $-(\text{CH}_2)_a\text{CONR}^5\text{R}^6$; and
 - 5) OR^{29} (wherein R^{29} is hydrogen, substituted lower alkyl, unsubstituted lower alkyl, or COR^{30} (wherein R^{30} is hydrogen, lower alkyl, substituted aryl, unsubstituted aryl, substituted heteroaryl, or unsubstituted heteroaryl));
- b) $-\text{CH}(\text{OH})(\text{CH}_2)_b\text{R}^{4A}$, wherein b is 1 to 6 and R^{4A} is hydrogen or the same as R^4 ;
- c) $-(\text{CH}_2)_d\text{CHR}^{31}\text{CO}_2\text{R}^{32}$ wherein d is 0 to 5, R^{31} is hydrogen, $-\text{CONR}^5\text{R}^6$, or CO_2R^{33} (wherein R^{33} is hydrogen or lower alkyl), and R^{32} is hydrogen or lower alkyl;
- d) $-(\text{CH}_2)_d\text{CHR}^{31}\text{CONR}^5\text{R}^6$;
- e) $-(\text{CH}_2)_k\text{R}^7$ wherein k is 2 to 6, and R^7 is halogen, CO_2R^8 (wherein R^8 is

hydrogen, lower alkyl, substituted aryl, unsubstituted aryl, substituted heteroaryl, or unsubstituted heteroaryl), CONR^5R^6 , substituted aryl, unsubstituted aryl, substituted heteroaryl, unsubstituted heteroaryl, OR^9 (wherein R^9 is hydrogen, substituted lower alkyl, unsubstituted lower alkyl, acyl, substituted aryl, or unsubstituted aryl), $\text{SR}^{27\text{B}}$ (wherein $\text{R}^{27\text{B}}$ is the same as R^{27}), $\text{NR}^{10}\text{R}^{11}$ (wherein R^{10} and R^{11} are the same as R^5 and R^6) or N_3 ;

f) $-\text{CH}=\text{CH}(\text{CH}_2)_m\text{R}^{12}$ wherein m is 0 to 4, and R^{12} is hydrogen, lower alkyl, $\text{CO}_2\text{R}^{8\text{A}}$ (wherein $\text{R}^{8\text{A}}$ is the same as R^8), $-\text{CONR}^5\text{R}^6$, substituted aryl, unsubstituted aryl, substituted heteroaryl, unsubstituted heteroaryl, $\text{OR}^{9\text{A}}$ (wherein $\text{R}^{9\text{A}}$ is the same as R^9), or $\text{NR}^{10\text{A}}\text{R}^{11\text{A}}$ (wherein $\text{R}^{10\text{A}}$ and $\text{R}^{11\text{A}}$ are the same as R^5 and R^6);

g) $-\text{CH}=\text{C}(\text{CO}_2\text{R}^{33\text{A}})_2$, wherein $\text{R}^{33\text{A}}$ is the same as R^{33} ;

h) $-\text{C}\equiv\text{C}(\text{CH}_2)_n\text{R}^{13}$, wherein n is 0 to 4, and R^{13} is the same as R^{12} ;

i) $-\text{CH}_2\text{OR}^{44}$, wherein R^{44} is substituted lower alkyl;

and the other of R^1 or R^2 is selected from the group consisting of

j) hydrogen, lower alkyl, halogen, acyl, nitro, $\text{NR}^{14}\text{R}^{15}$ (wherein R^{14} or R^{15} is hydrogen or lower alkyl, and the other is hydrogen, lower alkyl, acyl, carbamoyl, lower alkylaminocarbonyl, substituted arylaminocarbonyl or unsubstituted arylaminocarbonyl);

k) $-\text{CH}(\text{SR}^{34})_2$, wherein R^{34} is lower alkyl or alkylene;

l) $-\text{CH}_2\text{R}^{35}$, wherein R^{35} is OR^{36} (wherein R^{36} is tri-lower alkyl silyl in which the three lower alkyl groups are the same or different, or is the same as R^{29}), or SR^{37} (wherein R^{37} is the same as R^{27});

m) $-\text{CO}(\text{CH}_2)_q\text{R}^{16}$, wherein q is 1 to 6, and R^{16} is the same as R^4 ;

n) $-\text{CH}(\text{OH})(\text{CH}_2)_e\text{R}^{38}$, wherein e is 1 to 6, and R^{38} is the same as $\text{R}^{4\text{A}}$;

o) $-(\text{CH}_2)_f\text{CHR}^{39}\text{CO}_2\text{R}^{40}$, wherein f is 0 to 5, R^{39} is the same as R^{31} and R^{40} is the same as R^{32} ;

p) $-(\text{CH}_2)_r\text{R}^{17}$, wherein r is 2 to 6, and R^{17} is the same as R^7 ;

q) $-\text{CH}=\text{CH}(\text{CH}_2)_t\text{R}^{18}$, wherein t is 0 to 4, and R^{18} is the same as R^{12} ;

r) $-\text{CH}=\text{C}(\text{CO}_2\text{R}^{33\text{B}})_2$, wherein $\text{R}^{33\text{B}}$ is the same as R^{33} ;

s) $-\text{C}\equiv\text{C}(\text{CH}_2)_u\text{R}^{19}$, wherein u is 0 to 4, and R^{19} is the same as R^{13} ;

R^3 is hydrogen, acyl, or lower alkyl;

X is selected from the group consisting of:

- a) hydrogen;
- b) formyl;
- c) lower alkoxy carbonyl;
- d) $-\text{CONR}^{20}\text{R}^{21}$, wherein:

R^{20} and R^{21} independently are:

hydrogen;

lower alkyl;

$-\text{CH}_2\text{R}^{22}$, wherein R^{22} is hydroxy, or

$-\text{NR}^{23}\text{R}^{24}$ (wherein R^{23} or R^{24} is hydrogen or lower alkyl, and the other is hydrogen, lower alkyl, or the residue of an α -amino acid in which the hydroxy group of the carboxyl group is excluded, or R^{23} and R^{24} are combined with a nitrogen atom to form a heterocyclic group); and

- e) $-\text{CH}=\text{N}-\text{R}^{25}$, wherein R^{25} is hydroxy, lower alkoxy, amino, guanidino, or imidazolylamino;

Y is hydroxy, lower alkoxy, aralkyloxy, or acyloxy; or

X and Y combined represent, $-\text{X}-\text{Y}-$, $=\text{O}$, $-\text{CH}_2\text{O}(\text{C}=\text{O})\text{O}-$, $-\text{CH}_2\text{OC}(=\text{S})\text{O}-$, $-\text{CH}_2\text{NR}^{26}\text{C}(=\text{O})-$ (wherein R^{26} is hydrogen or lower alkyl), $-\text{CH}_2\text{NHC}(=\text{S})\text{O}-$, $-\text{CH}_2\text{OS}(=\text{O})\text{O}-$, or $-\text{CH}_2\text{OC}(\text{CH}_3)_2\text{O}-$; and

W^1 and W^2 are hydrogen, or W^1 and W^2 together represent oxygen;

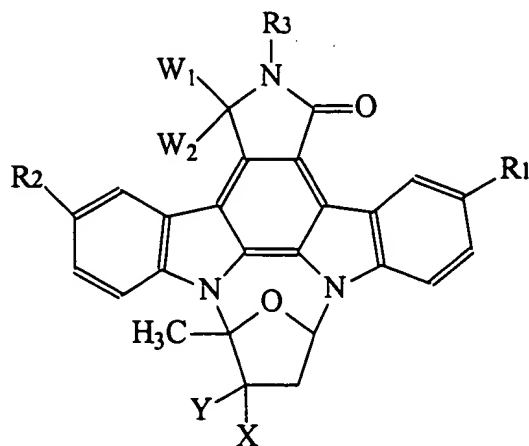
or a pharmaceutically acceptable salt thereof.

13. A method for enhancing the survival of a trophic factor responsive cell, comprising the step of contacting said cell with a compound of claim 2.

14. A method for enhancing the survival of a trophic factor responsive cell, comprising the step of contacting said cell with a compound of claim 5.

15. The method of claim 12, wherein said trophic factor responsive cell is a neuron.

16. The method of claim 15, wherein said neuron is a cholinergic neuron.



one of R^1 and R^2 is selected from the group consisting of:

- a) $-\text{CO}(\text{CH}_2)_j\text{R}^4$, wherein j is 1 to 6, and R^4 is selected from the group consisting of:
- 1) hydrogen and a halogen;
 - 2) $-\text{NR}^5\text{R}^6$, wherein R^5 and R^6 independently are hydrogen, substituted lower alkyl, unsubstituted lower alkyl, substituted aryl, unsubstituted aryl, substituted heteroaryl, unsubstituted heteroaryl, substituted aralkyl, unsubstituted aralkyl, lower alkylaminocarbonyl, or lower alkoxy carbonyl; or R^5 and R^6 are combined with a nitrogen atom to form a heterocyclic group;
 - 3) N_3 ;
 - 4) $-\text{SR}^{27}$, wherein R^{27} is selected from the group consisting of:
 - i) hydrogen;
 - ii) substituted lower alkyl;
 - iii) unsubstituted lower alkyl;
 - iv) substituted aryl;
 - v) unsubstituted aryl;
 - vi) substituted heteroaryl;
 - vii) unsubstituted heteroaryl;

[illegible]

- 5) ~~OR²⁹ (wherein R²⁹ is hydrogen, substituted lower alkyl, unsubstituted lower alkyl, or COR³⁰ (wherein R³⁰ is hydrogen, lower alkyl, substituted aryl, unsubstituted aryl, substituted heteroaryl, or unsubstituted heteroaryl));~~

c) $-(\text{CH}_2)_d\text{CHR}^{31}\text{CO}_2\text{R}^{32}$ wherein d is 0 to 5, R^{31} is hydrogen, $-\text{CONR}^5\text{R}^6$, or CO_2R^{33} (wherein R^{33} is hydrogen or lower alkyl), and R^{32} is hydrogen or lower alkyl;

e) $-(\text{CH}_2)_k\text{R}^7$ wherein k is 2 to 6, and R^7 is halogen, CO_2R^8 (wherein R^8 is hydrogen, lower alkyl, substituted aryl, unsubstituted aryl, substituted heteroaryl, or unsubstituted heteroaryl), CONR^5R^6 , substituted aryl, unsubstituted aryl, substituted heteroaryl, unsubstituted heteroaryl, OR^9 (wherein R^9 is hydrogen, substituted lower alkyl, unsubstituted lower alkyl, acyl substituted aryl, or unsubstituted aryl), $\text{SR}^{27\text{B}}$ (wherein $\text{R}^{27\text{B}}$ is the same as R^{27}), $\text{NR}^{10}\text{R}^{11}$ (wherein R^{10} and R^{11} are the same as R^5 and R^6) or N_3 ;

f) $-\text{CH}=\text{CH}(\text{CH}_2)_m\text{R}^{12}$ wherein m is 0 to 4, and R^{12} is hydrogen, lower alkyl, CO_2R^{8A} (wherein R^{8A} is the same as R^8), $-\text{CONR}^5\text{R}^6$, substituted aryl, unsubstituted aryl, substituted heteroaryl, unsubstituted heteroaryl, OR^{9A} (wherein R^{9A} is the same as R^9), or $\text{NR}^{10A}\text{R}^{11A}$ (wherein R^{10A} and R^{11A} are the same as R^5 and R^6);

g) $-\text{CH}=\text{C}(\text{CO}_2\text{R}^{33\text{A}})_2$, wherein $\text{R}^{33\text{A}}$ is the same as R^{33} ;

h) $-\text{C}\equiv\text{C}(\text{CH}_2)_n\text{R}^{13}$, wherein n is 0 to 4, and R^{13} is the same as R^{12} ;

i) $-\text{CH}_2\text{OR}^{44}$, wherein R^{44} is substituted lower alkyl;

and the other of R^1 or R^2 is selected from the group consisting of

j) hydrogen, lower alkyl, halogen, acyl, nitro, $\text{NR}^{14}\text{R}^{15}$ (wherein R^{14} or R^{15} is hydrogen or lower alkyl, and the other is hydrogen, lower alkyl, acyl, carbamoyl, lower alkylaminocarbonyl, substituted arylaminocarbonyl or unsubstituted arylaminocarbonyl);

- k) $-\text{CH}(\text{SR}^{34})_2$, wherein R^{34} is lower alkyl or alkylene;
- l) $-\text{CH}_2\text{R}^{35}$, wherein R^{35} is OR^{36} (wherein R^{36} is tri-lower alkyl silyl in which the three lower alkyl groups are the same or different, or is the same as R^{29}), or SR^{37} (wherein R^{37} is the same as R^{27});
- m) $-\text{CO}(\text{CH}_2)_q\text{R}^{16}$, wherein q is 1 to 6, and R^{16} is the same as R^4 ;
- n) $-\text{CH}(\text{OH})(\text{CH}_2)_e\text{R}^{38}$, wherein e is 1 to 6, and R^{38} is the same as R^{4A} ;
- o) $-(\text{CH}_2)_f\text{CHR}^{39}\text{CO}_2\text{R}^{40}$, wherein f is 0 to 5, R^{39} is the same as R^{31} and R^{40} is the same as R^{32} ;
- p) $-(\text{CH}_2)_r\text{R}^{17}$, wherein r is 2 to 6, and R^{17} is the same as R^7 ;
- q) $-\text{CH}=\text{CH}(\text{CH}_2)_t\text{R}^{18}$, wherein t is 0 to 4, and R^{18} is the same as R^{12} ;
- r) $-\text{CH}=\text{C}(\text{CO}_2\text{R}^{33B})_2$, wherein R^{33B} is the same as R^{33} ;
- s) $-\text{C}\equiv\text{C}(\text{CH}_2)_u\text{R}^{19}$, wherein u is 0 to 4, and R^{19} is the same as R^{13} ;

R^3 is hydrogen, acyl, or lower alkyl;

X is selected from the group consisting of:

- a) hydrogen;
- b) formyl;
- c) lower alkoxy carbonyl;
- d) $-\text{CONR}^{20}\text{R}^{21}$, wherein:

R^{20} and R^{21} independently are:

hydrogen;

lower alkyl;

$-\text{CH}_2\text{R}^{22}$, wherein R^{22} is hydroxy, or

$-\text{NR}^{23}\text{R}^{24}$ (wherein R^{23} or R^{24} is hydrogen or lower alkyl, and the other is hydrogen, lower alkyl, or the residue of an α -amino acid in which the hydroxy group of the carboxyl group is excluded, or R^{23} and R^{24} are combined with a nitrogen atom to form a heterocyclic group); and

- e) $-\text{CH}=\text{N}-\text{R}^{25}$, wherein R^{25} is hydroxy, lower alkoxy, amino, guanidino, or imidazolylamino;

Y is hydroxy, lower alkoxy, aralkyloxy, or acyloxy; or

X and Y combined represent, $-\text{X}-\text{Y}-$, $=\text{O}$, $-\text{CH}_2\text{O}(\text{C}=\text{O})\text{O}-$, $-\text{CH}_2\text{OC}(=\text{S})\text{O}-$, $-\text{CH}_2\text{NR}^{26}\text{C}(=\text{O})-$ (wherein R^{26} is hydrogen or lower alkyl), $-\text{CH}_2\text{NHC}(=\text{S})\text{O}-$, $-\text{CH}_2\text{OS}(=\text{O})\text{O}-$, or $-\text{CH}_2\text{OC}(\text{CH}_3)_2\text{O}-$; and

W^1 and W^2 are hydrogen, or W^1 and W^2 together represent oxygen;
or a pharmaceutically acceptable salt thereof.

18. A method for enhancing the survival of a cell at risk of dying, comprising the step of contacting said cell with a compound of claim 2.

19. A method for enhancing the survival of a cell at risk of dying, comprising the step of contacting said cell with a compound of claim 5.

20. The method of claim 17, wherein said cell is at risk of dying due to a process selected from the group consisting of aging, trauma, and disease.

21. The method of claim 20, wherein said cell is a neuron.

22. The method of claim 16, wherein said method is used in the treatment of Huntington's disease.